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Jerry Wise, Treasurer  
Indianapolis Airport Authority, Suite 100  
7800 Col. H. Weir Cook Memorial Drive  
Indianapolis, IN 46241

Dear Mr. Wise,

We are pleased to respond to the Airport's Request for Qualifications (# N/A) with **EximSoft's Soft Meter Applications (SMA)** – an innovative idea of introducing many VIP like customer friendly airport parking services using cell phone and Internet. It is a web based real time on-line cashless meterless parking and reservation system overlaid with the current system operation and the existing IT infrastructure. The system or also called web portal, if configured properly, can do advance airport parking functions as are done currently with efficiency and enable the Airport to use the same application for other registration, reservation and payment related services. Parking web portal can also draw advertisement revenues from local businesses. In the traditional parking services, there are many woes such as low tech solution with little or no concept of VIP like customer services for client satisfaction and thus lacking an image of parking to patrons, cash oriented subject to slippage, not flexible to change for rates, expensive, long term planning to install. Software solution will always be environmentally friendly (**'Go Green'**) reducing **CO2 emission and traffic congestion due to circling**. In addition, it assists business customers to reduce their time for parking search in one hand and the airport authority can take this advantage of generating more revenues with reservation (guaranteed and proximity parking) for business customers.

**Eximsoft's SMA Solution:** This is an innovative approach integrating over 11 state of the art technologies for more efficient and most cost effective operation and to work without any coins/cash (if desired) for metered or non-metered spaces. SMA has taken advantage of technologies that are available to elevate each and every problem highlighted above and also to improve parking operation such as security, cost, revenue and automation. We feel parking services could evolve into a ubiquitous service similar to telephone/water services across the nation and the process can be decriminalized in contrast to the current approach. For airport parking, SMA capabilities especially related to innovative payment methods are highlighted as follows to meet the Airport's intention ( Airport may choose some or many of these features to integrate with the current operation):

- Web based registration for an account or credits for parking as done for water or other Airport services (pre-collection of parking fees with floating hours/days – an option)
- Confirmation of registration and system generated unique PIN code or ID for cell phone
- Credit card or debit card purchase of these credits as well using Internet or talking to a Airport operator
- Automatic e-mails of these credits and balance as you keep on spending (expense logs)
- Spend your parking credits as and when required using your unique ID (mobility)
- Activate your parking using unique ID and Interactive Voice Response (IVR) prompts
- Alternatively, print a bar coded permit at home/office like airline boarding pass – very good for out of Airport visitors
- Deactivate parking and get credit for unused time – an improved Airport image, if required
- Prompting by the system for time extension or extending it for the next time slot with an e-mail, SMS notification
- Implement VIP like parking services issuing unique name, day, time, vehicle, etc.
- System generated text message or e-mail to warn of time or credit expiration
- Step up rates instead of e-citation to avoid expensive judicial process (decriminalization)
- Add more revenue generating spaces with small software change in stead of long delay

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- Reservation for guaranteed space via e-mail confirmation with the flexibility of changes as and when needed
- Introduction of loyalty program or incentive program for frequent parkers
- Advance collection of fees for all VIP services – scope of money earning money

With the above innovative approach of payment methods, Airport can reduce much of cash collection efforts and take advantage of parkers doing themselves some of the traditional Airport's routine works done by employees. This collection method, once successful for parking, can also be introduced for many other Airport services.

**Result Of Years Industry Research:** EximSoft has performed a great amount of research by talking to vendors and customers in the parking industry and developed a good understanding of customer requirements and the latest trends in this industry. SMA is the product of combined visions of three companies – Eximsoft, Ericsson and Entrust. The working model of the application with the integration of the interactive voice response (IVR) as parking guide can be viewed in [www.perkpark.com](http://www.perkpark.com) with live participants. The current working system will meet almost all features and function of airport parking. Additional functions/features will be customized to be deployed based on a mutual understanding of joint specifications written during the discovery phase of the project.

**Web Based:** Our system with web based functions and features can be scaled up with little cost. We have analyzed all the requirements described in RFI including the integration and customization of a system conforming to these requirements. The cost component is scalable. Systems integration and customization efforts are required especially in the hybrid mode. Cell phone interface for IVR by parkers will have recurring cost to the parker not the Airport. Real time interaction with the centralized registration/reservation system will make enforcement more efficient reducing number of enforcing officers. IVR charge for parking is per call from the third party vendor such as Nuance/Diagenix and can be negotiated based on call volume. System integration efforts are on hourly rate and it will depend on the services rendered based on the complexity of other functions integration. The system integration cost will be on an actual basis given in the proposal once the final specification is agreed upon during the discovery phase – Phase 1 of the contract agreement.

Eximsoft has presence in India, USA and Ottawa, Canada and has performed the systems integration in a very cost effective way. EximSoft can provide a turnkey solution to fulfill short-term and long term needs of the Airport. Executive Summary is enclosed to highlight different aspects of the company, its capabilities and the proposed solution for a quick overview. We also enclose a CD containing (1) Technical/Financial Response, Computer Based Training (CBT) information, copies of papers on the subject, news articles, press release, etc.

We look forward working with you and to move it to the next steps in the process. Your cooperation will be highly appreciated. The program could qualify for a stimulus funding if Eximsoft can find a willing participant to try out such technology to reduce CO2 emission and traffic congestion. We are not parking company but are open to partnership with the Airport or any parking company who sees a benefit of the technology to decriminalize the parking industry for friendlier and flexible services with the help of a company who is in the forefront of it. The uniqueness of the Eximsoft's application is exemplified by its capability to serve the airport and the city parking from the same server having the same look and feel and requiring no separate technologies. Same account holders can use parking facilities in the city as well as in the airport with similar ease and flexibility.

Yours truly,

Amalendu Chatterjee

VP-Technology (Authorized Agent Of Eximsoft International & Axsys technology Pvt Ltd.)

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## **Executive Summary**

### **1. Eximsoft Overview:**

EximSoft is a software service and products company spread across the globe. With points of presence in the United States, Canada (Ottawa), and India, the company specializes in e-commerce, telecommunications solutions, wireless applications, and parking applications. Our team of highly qualified, motivated people has 2 to 10 years working experience, and we draw on varying disciplines – computer science, traditional engineering, telecommunications, networking, graphic design, etc. – as we develop customer solutions. In addition, the company has two key relationships that enable us to deliver world-class products and services: we are the software resource partner of Federal APD, market leader in the North American Parking Industry, as well as an IBM development partner for WebSphere.

### **2. Axsys Technology (Eximsoft's Partner)**

Founded in September 2000 by a group of experienced IT professionals, **Axsys Technologies Limited** is a global offshore IT company, benchmarked to international standards, offering quality software development, web solutions and IT consultancy. Having been a part of the industry for around a decade, the company has proven its expertise in custom application development, web design and development, database engineering and networking solutions. In a relatively short time the company has carved a niche very much its own by aiming to be a pre-eminent and quality provider of Information Technology (IT) and Engineering & Design Services (EAD). For more details, please visit – [www.axsyssoftware.com](http://www.axsyssoftware.com). A combined financial report will be available as and when needed.

### **3. Solution Overview**

There are over 230 million cell phone users (more than 170 million land line users) in North America and growing in the country. Internet users may also be of similar range and also growing. There will be a day when cell phone will be the most trusted personal device (MTPD) for doing many practical functions daily such as payment, shopping, universal ID, etc. An application for parking industry using the cell phone and Internet is not just an accident but an innovative thought to initiate an evolution in the parking payment, operation and management for all different parking scenarios. We see parking industry moving from hardware (meter, car device, ticket, smart card, etc.) and space specific solution to more software oriented solution to avoid recurrent distribution, printing, reloading and repair, vandalism, lost and stolen ticket, lead time to generate new revenues, maintenance cost associated with hardware.

While an evolution is required with innovative ideas, the new system should also be an overlaid system to conform to all current requirements. With that in mind, the proposed Parking System for the Airport is based on the Cashless Meterless Parking Permit and Reservation System, EximSoft's open source, secure software tool developed for universal application in the parking industry. The system fully exploits the latest wireless technology to facilitate mobility for the end user and the enforcer: Attachment 1 describes the product which can be customized to many other formats and requirements. One can also get a feeling of its operation by visiting web site: [www.perkpark.com](http://www.perkpark.com).

SMA will enable registration and tracking of visitors, parkers, employees and online sales of long-term and short-term parking permits, reservations, e-citations, violations, and street parking with meter or marked spaces. In addition, the system will enable links into DMV database (if required) as well as existing payment system and other legacy databases, thus allowing the automatic integration of services. The system is not location-based and can be run from a central database to administer multiple locations and campuses. Further, it is designed to be modular and scalable, supporting future growth of parking services and/or additional users, spaces, with minor software change. The system makes novel use of physical marking procedures of all parking lots, or numbered spaces in correlation with physical or abstract identifiers (e.g., license plates or customer account numbers). This enables parking authorization, security protection, and fee collection using various communication methods – web access, cellular phone, cash, check, credit and debit cards. The system keeps records of each and every event for generating reports of

various kinds. Even parker oriented account reports or citation reports are generated for their view. Parkers can make an on-line appeal for the citation and review its progress of resolution.

Enforcement procedures are carried out using wireless web-enabled scanner devices as needed. This handheld device communicates with the central SMA server to determine the status of a given car/driver and to give proper instruction to the parking attendant and/or enforcement officer. The SMA proposal also includes the integration of the electronic enforcement system, a secure and straightforward solution for improving ticket issuance, processing and collection time. Most of functions required in parking such as auditing procedures, revenue handling procedures, lien sale procedures, lost ticket procedures, valet parking procedures, discount coupon handling, supervisor's duties and procedures, customer service procedures and report generation can be integrated for real time on-line implementation and instant rate changes if required. On-line pre-authorized but dated PIN code or separated entry tickets for visitor drivers can be issued instead of hard coded signed permit for non-paid patrons on real time. Problems associated with swapping ticket, stolen tickets/cards, blank tickets/cards, foreign tickets, used ticket/cards, cancelled tickets/cards, mutilated tickets, back-out tickets, etc. can be easily eliminated using SMA procedures. Patrons can be partitioned for their entry using unique bar code procedures on a real time basis without the problem of dealing with spitted hard ticket. In the ideal eventual implementation of SMA, no cash will be involved as the parking industry evolves with a technology of many choices. Web enabled cell phones can have the bar coded screen shot of the permit requiring no printout at home.

Built on open standards such as Java & XML and benefiting from open source platform, Eximsoft is the market leader for integrating various platforms for e-commerce and on-demand business. EximSoft proposes to fully implement, integrate, and customize each element of the parking solution, annual and daily permits, meter and garage parking, parking tickets, appeals, real time inventory and auditing.

## Business Case Analysis

The objective of SMA is to provide VIP like customer service such as proximity of parking space, guaranteed space, 800 call street parking, ability of making reservation using cell phone from any where and any time (mobility), electronic payment, electronic reporting and e-mail confirmation. The benefits of such services are:

- No Cash handlings and so less attendance cost and faster service
- Advance collection of fees
- Premium charge for guaranteed space generating more revenues
- Scope of new Revenues with added spaces by software codes (minutes instead of buying new meters and installing lead time)
- Promotion of services via Internet
- Introduction of 21<sup>st</sup> century technologies
- Electronic payment, cell phone payment
- Loyalty program, frequent parkers program, etc.
- Friendlier service to decriminalize parking industry

The biggest benefit is the saving that may be derived from different functional requirement areas highlighted in the table below. We are talking of capital savings over \$2,000,000 (USD) and operational savings of \$350,000 (USD) per year for 3000 meters Airport.

**Table1: Saving Opportunity For Street parking with SMA.**

	<b>Hard Meter</b>	<b>Soft Meter</b>	<b>Saving by Unit</b>	<b>Total Savings For 3000 meters</b>	<b>Comment</b>
<b>Unit Cost</b>	\$500	\$50	\$450	\$1.5 Million	May be Less with SMA beyond. 3000 spaces
<b>Installation</b>	\$150	\$0.00	\$150	\$450,000	
<b>Systems</b>	\$100	\$20	\$80	\$240,000	

<b>Integration Systems Maintenance Cost Per Meter</b>	\$75	\$10	\$65	\$195,000	Technician's Salary Of \$35,000 per year – 15% of hardware cost
<b>Collection Cost Per Meter</b>	\$50	\$0.00	\$50	\$150,000	Salary Of \$25,000 per year per person with 500 meters per day

**Table 2: Scope of New Revenues from Airport Parking Reservation Services**

City	Airport Code	Total parking spaces	5% are "premium" spaces	\$5 per day per user	
				Annual revenue - 90% occupancy (millions)	Annual revenue - 80% occupancy (millions)
Atlanta	ATL	30,000	1,500	\$2.46	\$2.19
Chicago	ORD	21,000	1,050	\$1.72	\$1.53
Los Angeles	LAX	8,000	400	\$0.66	\$0.58
Dallas / Fort Worth	DFW	28,000	1,400	\$2.30	\$2.04
Phoenix	PHX	8,005	400	\$0.66	\$0.58
Denver	DEN	4,000	200	\$0.33	\$0.29
Houston (George Bush Int'l)	IAH	23,000	1,150	\$1.89	\$1.68
Las Vegas	LAS	15,055	753	\$1.24	\$1.10
Minneapolis / St. Paul	MSP	18,000	900	\$1.48	\$1.31
Detroit	DTW	20,000	1,000	\$1.64	\$1.46
<b>Newark</b>	<b>EWR</b>	<b>13,979</b>	<b>699</b>	<b>\$1.15</b>	<b>\$1.02</b>
<b>New York City (JFK)</b>	<b>JFK</b>	<b>13,854</b>	<b>693</b>	<b>\$1.14</b>	<b>\$1.01</b>
Orlando	MCO	13,707	685	\$1.13	\$1.00
Philadelphia	PHL	13,270	663	\$1.09	\$0.97
<b>New York City (LGA)</b>	<b>LGA</b>	<b>12,362</b>	<b>618</b>	<b>\$1.02</b>	<b>\$0.90</b>

## Current Features/Functions

Many software modules of SMA address different roles of parties involved in the parking administration. Functions and features are grouped as end user, cashier, enforcement officer, administrative and supervisor and manager. Below is the list of many features and functions now available to cover all aspects of parking including street parking. These may be further customized in any parking scenario of Airport's choice.

- Web enabled application for all parking scenarios including employee permits
- Open source platform to integrate with the existing IT infrastructure
- Parker access to the application for setting up the account
- Registration template using different interfaces such as browser, operator, phone to collect parker information
- Same payment methods for metered or non-metered spaces
- Floating hours for street parking with name, date, time, etc.
- Step up rate to decriminalize the parking industry after expiration of normal street parking hours
- Reservation template indicating terminal, floor, time, and duration of parking space
- E-mail confirmation of both registration and reservation
- Guaranteed parking space based on reservation schedule – a VIP like service
- Generation of PIN code for telephone access to the system
- Weekly, monthly or yearly permit for employees
- Generation of unique Bar Code as permit for parking
- On-line distribution of those codes for printing for authentication and validation at the gate
- Interactive Voice Response (IVR or XML) for street parking guide

- WiFi interface for enforcement to reduce recurring telephone calls of enforcement, if required
- E-citation and on-line data synchronization for batch processing of enforcements
- Loyalty program, frequent parker program and Data mining for promoting Airport services
- Pre-collection of fees during reservation or granting a permit process
- Parker access to their account with an UID and PWD
- Flexibility of changing registration and reservation parameters as and when needed by individuals
- Operator's remote access of parking activities with different level of security access
- Location of car in case people forget the place they parked using license plate information
- Different report (financial and others) generations for and by patrons, administrators and operators

## Additional Enhancements

- Use of GIS for display of parking facilities and their space layout and availability remotely
- Trusted Parker Program (TPP™) to secure parking spaces requiring security against terrorism
- Automated License Plate Identification (LPI) and Recognition
- Transportation of Bar Code with date, time and event in the web enabled cell phone
- Uniformity of payment and standard way of parking operations by the parking industry across North America
- Gate automation using recognition of bar code, license plate, permit, unique ID, etc.
- Any other customized functions as thought by parking operators during system integration
- Integration with the Airport's existing Parking And Revenue Control (PARC) system
- Public and private partnership for coordinating parking resources and revenue sharing

Eximsoft will comply with additional requirements outlined in the RFI as part of systems integration. During the exploratory stage (maximum of four weeks – discovery phase) after the contract is offered, a joint document will be developed and agreed between parties to define the final scope of the project to be deployed within the June/July time frame.

## Other Technical Details

All business needs are covered as part of the current solution as well as evolutionary solution in future. The technology and platform capabilities are tabulated in the Table 3, Technical Environment of the Parking Management System Enhancement proposed solution. We are confident to serve all Airport's needs though the platform and the environment chosen. In most cases, Eximsoft's chosen components will prove very cost effective and efficient. We can entertain different platforms of Airport's choice as well.

**Table 3: Technical Environment of the Parking Management System Enhancement**

Technical Architecture Components	Component Specification	Comments/Rationales
Operating System	Windows XP Or Linux	Both are compatible
Server Application	Open Source. It is Boss 4.2.5	Open Source Easy to write applications and free
Database System	Post GreSQL	Can be migrated to/from Oracle or similar database
Application Languages	PI/SQL	PI/SQL with ANSI standards
Web Browser Services	MS IE 6.0 or MS IE 7.0	Both and flexible to

		integrate
Authentication Services	DHCP	Yes, PKI can also be integrated for added authentication
Reporting Services	Jasper	Jasper has additional features than Crystal
Geographical Information Services (GIS)	ESRI or (Environmental System Research Institute or ArcGIS 9.2)	No, there is no GIS capability. Can be a future scope – part of customization
Web Services	JSP	JSP which can run on Linux
Network Communication Protocol	IP	IP with many features
Server Hardware	Dell or HP	No restriction due to the open source tools
Message and E-mail Interface	Java	Message is Java Messaging Services API
Differentiators	Open source Technology	Free, flexible and is compatible with different platforms to write services (old and new)

## Conclusion

EximSoft has developed an effective end-to-end solution for the parking services and its payment procedures. Eximsoft has implemented the solution on a proven hardware and software platforms for secure, reliable, scalable implementation for the 21<sup>st</sup> century. The system can be installed as stand alone basis or can be integrated with the existing IT infrastructure based on customer's choice. The final scope of system integration with additional features and functions as dictated in the RFI will be jointly developed for resources allocations during the discovery phase. A schedule (Gantt Chart) based on hourly rates approved between two parties can then be developed for a system to be installed in the field.

Table 4: Project Execution Chart as per Discovery Phase

Item	April, 2010	May, 2010	June, 2010	July, 2010	August, 2010	September, 2010
	Four Weeks	Six Weeks	Seven Weeks	Five Weeks	Three Weeks	One Week
Discovery Phase						
Development Phase						
Customization Phase						
Integration with Legacy System						
Installation & Testing						
System Commissioning						



## Attachment 1: SMA



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### 1. Soft Meter Application (SMA): A User View Description

SMA is an over arching solution for the Parking Industry. The system is applicable for all the following parking scenarios:

- ☐ Street Parking
- ☐ Garage Parking
- ☐ Event Parking (e.g. sports arena/ concert venues) — with premium reservation options
- ☐ Parking – with premium reservation options

Each of the above parking scenarios requires only a simple, one time prior registration with the service provider by the end user. Users can access the system and its services from a variety of locations and terminals:

- ☐ Wireline phone
- ☐ Cellular phone
- ☐ Web-enabled wireless device
- ☐ Web terminal
- ☐ PC

The registration form is depicted in **Figure 1**. The registration captures user details like user name, mobile phone number, preferred mode of payment (credit, debit), and the vehicle detail. Using this facility, the user can create or modify his/her existing profile. Once the registration process is successful, users are given a PIN code. **Further customization of this form and many other business logics is also possible if required.** The SMA system is exploiting robust innovative network elements and services among which one can enumerate the following capabilities:

- ☐ Secure Web connectivity
- ☐ Scalable robust Web Servers
- ☐ Web Browser access – PC or cell phone
- ☐ Interactive Voice Response - and, eventually, voice recognition
- ☐ Authentication services

The network architecture shown in **Figure 2** is used for initial end user registration, parking fees collection, premium reservation, activation and deactivation of parking, priority access to a parking lot, as well as parking enforcement and enhanced security. At the core of the SMA system processes reside the novel and innovative ways of integrating a variety of technologies and Internet services:

- ☐ Computer server technology with intelligent agents,
- ☐ Geographic Information Systems (GIS),
- ☐ Secure Internet Web Services,
- ☐ Geographic Position System (GPS),
- ☐ Wire line and wireless communications networks,
- ☐ desk top computers,
- ☐ web enabled mobile communication devices,
- ☐ Secure Internet payment systems,

- ☐ Digital signatures and identification systems,
- ☐ Interactive voice response (IVR) system
- ☐ PKI, and SIM cards,

## Figure 1: Registration Form

### PARKING REGISTRATION

-- Raleigh Capital Parking -- 212 Wolfe St., Raleigh, NC 27601 -- phone: 919-833-2549 -- fax: 919-833-9842

Required information necessary to complete registration is identified with an asterisk "\*".

#### Security:

Personal Identification Code:

\* (Please note down this 4-digit code. You will need this to make a reservation later.)

Password:

\*

Retype Password:

\*

#### Tell us about you:

Title:

First Name:

\*

Middle Name / Initial

Last Name:

\*

Last Name Suffix:

Street Address 1:

Street Address 2:

Street Address 3:

:

\*

State:

\*

Zip Code:

\*

Country:

Phone number:

\*

E-mail Address:

#### Tell us about your automobiles

License Plate	Color	Make	Model	Year
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

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**Tell us about how to bill you:**

Name on Card:

Card Type:

Card Number:

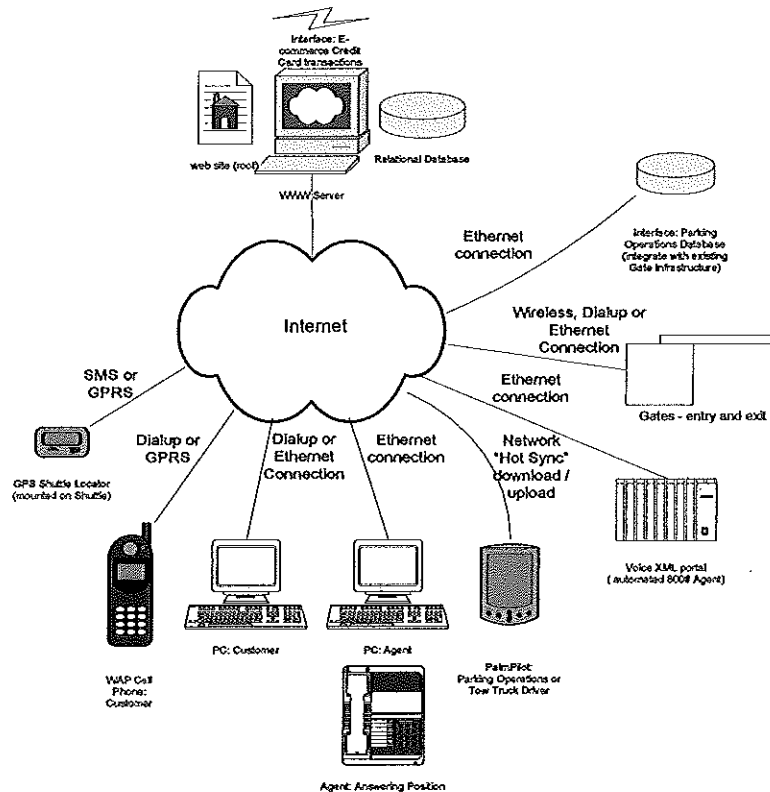
Cardholder Verification Value:

Card Expiration Date (MM/YYYY):  /

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Figure 2: Network Architecture



## 2. Street Parking – cashless meterless premium and legacy-compatible services

The user in his/her car finds a suitable (permitted, marked and uniquely identified as such) street parking spot. The legacy service would require him/her to insert coins in the meter (if available) to secure a finite-

time parking allowance, or go to the nearest ticket-dispensing machine to acquire a time-predetermined parking voucher to be displayed on the car dashboard.

While such legacy services may continue to be available, in the presence of the Eximsoft's SMA system, the user has the option of securing a premium cashless parking service by using a web-enabled mobile device to access the SMA system or simply by dialing an "800" free number using the cell phone or a wire line phone to connect to the parking system. Through its interactive voice response features, the SMA system prompts the user for PIN code (in certain circumstances the PIN code may not be necessary as the cell phone number itself can be the unique identification of the user) and the parking spot unique identifier (e.g. meter number or physical parking space number). In the absence of a unique parking space identifier the user provides the system with just the License Plate number. The SMA system immediately validates the input given by the user and activates the parking service. It also gives the user confirmation of parking at the specific space. There are different friendlier ways to extend the initial time of parking without ticketing at the discretion of the Airport. One such example is the step up rates after certain period.

To deactivate the parking the user calls the same 800 numbers and just enters the PIN code and the space number or meter number, following which the SMA system deactivates the parking with a message to the user of time spent and the amount charged to his/her credit card or prepaid account. The system also sends the parking activation and deactivation notifications on line to the Parking Enforcement Authorities via their wireless hand held devices in order to inform them and to facilitate their enforcement functions.

### **3. Garage Parking**

The user enters the garage by using the existing system and its legacy infrastructure. The process for activation and deactivation of the parking is the same as the street parking, with the user providing the PIN code number and the license plate number to the system. The system will send the user license plate number on line to the wireless handheld device and/or to the desk top terminal of the garage attendant at the exit gate. When exiting, the user gives the attendant the ticket and the license plate number. The attendant registers the time and verifies the match of the license plate number with the system record. The gate will open on the reconciliation of the license number with the parking record, and the user will be debited with the corresponding parking fee. An automatic license plate reader or user card identifier can be incorporated to further automate the process.

### **4. Event Parking**

The event parking process starts with the one time user registration with the event parking authority, largely as described in the street parking scenario above. The user accesses the system via a web-enabled device (PC, PDA or web-phone), or he/she dials the 800 number using a cell phone or a wire line phone to connect to the parking system. The SMA voice response module prompts the user for the event (date and/or time) together with the user PIN code (in certain circumstances the PIN code may not be necessary as the cell phone number itself can be the unique identification of the user). The system immediately verifies the input given by the user and initiates a parking reservation. Optionally, the SMA system may offer a premium service related to priority parking location (a feature much appreciated in inclement weather and/or at large sport events). The user is given a message by the system confirming the parking reservation for the event with a unique parking authorization code (optionally identifying the premium parking spot reserved), together with the amount charged to the user credit card. The unique authorization code given to the end user is also downloaded to all the enforcers' hand held wireless devices on the day of the event. At actual parking time, the parking attendant/enforcer will match the authorization code against the record in the hand held device and allow the user to enter the parking lot. Optionally, the attendant may direct the user to the premium reserved spot reserved a-priori.

### **5. Airport Terminal Parking**

The fundamental process for the end user starts with the one time registration with the Parking Authority as in the case of street parking above. The Parking Authority will provide a well-marked reserved area in the existing Parking garage or the lot, which is at close proximity to the departure gates. **This is a premium Parking Service.** The user accesses the SMA system via a web-enabled device or by dialing the 800 number using the cell phone or a wire line phone. The SMA system handles the web access or uses its voice response module to prompt the user for his/her PIN code (in certain circumstances the PIN code may not be necessary as the cell phone number itself can be the unique identifier of the user) and the dates when the Reserved Parking is required. Optionally, the user may be prompted to provide the airline flight, such that the system can offer the most advantageous parking spots as a premium service. As mentioned above, the user can avail of any web enabled device (PC, PDA, web phone) with Internet connection and do the Parking Reservation via the Web. The system immediately validates the input given by the user; the user receives a message from the system confirming the parking Reservation for the dates and the amount charged to the user credit card for the specifically reserved spot. The user enters and exits the parking facility using the existing system and pays the regular parking fees. The license plate number of the Reserved Parking user is downloaded to the wireless handheld devices of the parking attendants required to facilitate enforcement functions.

## **Other information as a Response to the RFI**

Airport's scope of parking responsibilities is noted.

### **1. Scope of Services**

#### **A. Technologies:**

Eximsoft is proposing a unique soft meter application (SMA). SMA when configured as part of IT infrastructure is a revolutionary solution gradually enhancing the current revenue control and access system of the airport for reserved and proximity parking services. In the interim period, the system can be installed as an overlaid system to operate in the hybrid mode. Seamless integration with the current access control system is possible with no extra hardware other than a scanner depending on the option of configurations for new revenues. There is no yearly field maintenance, no inventories, no vandalism and no cash collection for soft meter reducing yearly cost in addition of capital cost. In terms of scalability, revenue generating spaces can be added in a minute notice.

#### **B. Payment Methods**

Payment method is very simple mostly advance collections in stead of spitted tickets or credit cards inserts in the field sometime causing mismatch. The parker sets up an account with the Airport during Internet registration with e-mail confirmation. During this set up, the parker establishes a credit with the Airport like any other city services such as water, waste collection, etc. and the incumbent pays for parking services as he/she uses the service. Payment methods during registration could be cash, check, credit card, etc. A KIOSK can also be set up in the office or airport location for self payment of invoices and bills. Parkers can also purchase home printed floating pass for a several hours or a day that is not specific to a particular space using Internet. This could be very convenient for out of Airport visitors where they can visit different places of interests in the Airport without looking for cash or coin.

For payment by phone, it could be via mobile e-commerce for on-line credit card payment. The simpler method is to have a PIN code that is delivered during registration e-mail confirmation and Interactive Voice Response (IVR) integration. During parking activation process, the system prompts for identification parameters and then grants the parking privilege for hours or days chosen. The system has the option to extend the parking privilege or deactivate the parking process called deactivation process at user option, again, through IVR prompts.

For the software configuration of SMA, Eximsoft has to install the software in Airport's choice of server host. Characteristics of the server platform required have been outlined at the beginning, **Table 2**. SMA will have interface for cashier terminal, KIOSK or credit card processing centers such Paypal, Moneris, and any other interface of Airport's choice. The Airport has to choose one such interface that they use the most. In addition, the Airport may choose pay roll deductions for Airport employees. Additional customization will be required for such integration. SMA is PCI compatible but Eximsoft does not have PCI certification to hold credit card information.

#### **C. Communication Methods**

All parkers will have the cell phone interface to the system for parking activation and deactivation process with no cost to the Airport. IVR software and hardware modules have to be licensed during system integration. WiFi will be required for on-line real time enforcement, and appeal process using hand held devices. Off-line capable hand held devices will work in the interim period.

## **D. Innovative and Expedition methods of Enforcement, Operations and Reporting Capabilities**

Real time on-line enforcement is very easy and efficient with SMA. When connected with the central server on real time, the enforcement officer will have the last minute or instant information of the space occupancy and the parker in the hand held device. The information could be color coded for easy viewing. The officer can view number of cars in a block and then matches the information in the hand held device. The officer does not need to check each and every car. The officer can also write ticket and impound cars for repeat offenders by exploring the database via the hand held device. Enforcement method could be eliminated when SMA is seamlessly integrated with the existing access control and revenue system. Every event is logged for tracking reducing the scope of disputes.

The parker can view his ticket on-line, appeal the ticket on-line, resolve the dispute and even pay on-line when the appeal fails. The parker can also see his account activities as and when desired.

Jasper reporting engines have been integrated for generating different reports. It is an open source product requiring no licensing fees and its formats are better than expensive Crystal reporting engine requiring licensing. Many more customized reports are possible beyond what are standard reports in Jasper platform.

## **2. Specifications**

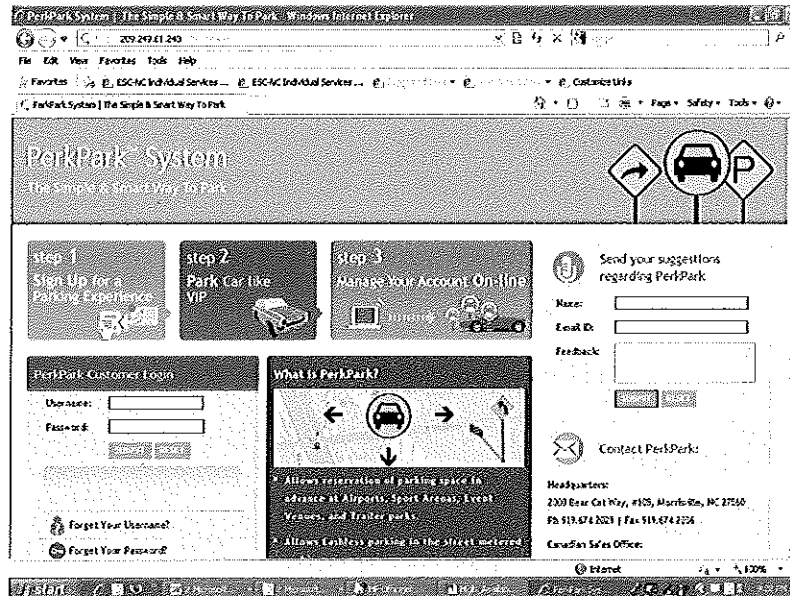
Eximsoft is proposing a parking portal for all parking services which has been described in the section, a solution overview. Parking portal becomes part of the IT infrastructure and simplifies parking operation reducing capital costs, maintenance cost, improving efficiency, reducing CO2 emissions, inventory, cash collection, etc. The parking portal also helps the Airport to introduce many friendlier services such as loyalty program, and others with new revenue opportunities. The theory is nobody should leave home or even start the car without knowing the exact place to park – a medicine for reducing the traffic congestion in the airport and also CO2 emission due to idling and circling..

## **Phase 1 Proposal Requirements**

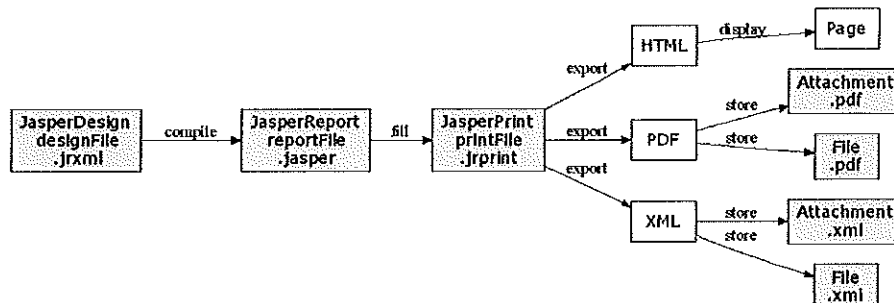
### **A. Functionality**

Many traditional functionalities of the parking industry have been simplified by the parking portal where more than 11 technologies have been integrated with a possibility of additional integration as new concepts are developed. For example, we eliminated the need of electrical connection, static hard meter in the street, cash collection, lead time to install meter, etc. in favor of software changes for adding spaces to generate revenues, instant rate change as and when needed for special events, efficient enforcement with WiFi capable hand held devices where database information is on the officer's finger tip on real time for instant action. Spaces are uniquely marked with a can of paints for identification. Parkers are identified by a PIN supplied during registration, license plate, name, address, etc.

A training CD is enclosed with the proposal to give an overview of all functions and related ICON. ICONs are categorized by four group functions such as Administrator to configure parking parameters, parker or user of the portal, cashier for collection of payments, and enforcement officer.



Below are examples of Jasper Reporting capabilities. We do not support Crystal Reporting engine. Instead, we use Jasper Reporting engine to generate all required reports. This has a better performance record and is more xml friendly than Crystal report engine and it is free. Report can be viewed as any predefined file formats. Jasper report works as shown below:



Below is an example of auto e-mail with appropriate meters populated from the database.

### Invoicing/Notice/Letter Generation

SMA conforms to all requirements needed for auto mailing. Below is a format of a typical letter generated by the system using information from the customer record. Here text in black are all static hard coded text which will be there in the report template and text in red will be the dynamic contents of the report. These databases driven dynamic text will be embedded into the letter template at runtime.

Mr. Eric Anglea  
19 Pine Street  
Andrews AFB, MD 20335-

Dear Mr. Anglea:

Your check number 1026, dated January 22, 1995, which you remitted to the Metropolitan Washington Airports Authority at Washington National Airport, was returned by your bank for "insufficient funds."



The amount payable at this time is \$40.00; \$30.00 for the face value of the check and a \$10.00 charge for the returned check. Please remit the amount due within ten days.

Please forward to us a certified check or money order, made payable to "Metropolitan Washington Airports Authority," along with the enclosed copy of this letter. Address your reply to:

COMARCO, Inc.  
South Parking Structure  
Washington National Airport  
Washington, DC 20001-4901

Your cooperation in this matter is appreciated. Upon receipt of proper payment, your check number 1026 will be returned to you.

Sincerely,  
Nancy Parode  
Finance & Accounting Manager

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## **B. Maintenance and Service**

Manuals have been replaced with on-line training documents that can be updated as the software with dynamic functions evolves. Parker can also learn the procedures through the same process. The idea is to either eliminate, or minimize or shift some of traditional responsibilities and costs such as bill collections, remote diagnostics, performance, machine warranty, repair, hardware replacement from the Airport to the parker (in some cases). The parker has to keep his account and credit card up to date like any other services and use his cell phone timing for activating parking. All maintenance becomes part of the IT infrastructure, software debugging, portal availability and reliability.

Parkers and Airport administrators can access the parking portal using UIDs and PWDs. There are different levels of UIDs/PWDs depending on the security functions to be managed.

## **C. Payment Options**

The system has the capability to collect all irrelevant information such as addresses, vehicle information, credit history of all possible parkers to accept pre or post parking payments. Pre or post payments collections are: cash, check or credit using cash terminals or credit/debit card interface. Airport can also set up KIOSKS in the premise for facilitating credit card or debit card payments. The software is PCI compatible but Eximsoft is not PCI certified. It will be Airport's responsibilities to make arrangements at the volume discount with the credit card company of Airport's choice. All transaction reports will be customized as per Airport's requirements using Jasper reporting engine. The system proposed does not interface any smart card as there is no field transaction. Pay by phone is done on a pre-arranged basis with a PIN code generated by the system during registration unless Airport is willing to integrate mobile e-commerce with PKI secured transactions. Mobile e-commerce could be integrated in the Phase 2 time frame for many other Airport services including parking. .

## **D. Rollout Implementation Schedule**

Table 4 shows a tentative implementation schedule within six months for a robust system trial. Further refinements will be done during the discovery phase after the contract agreement. Discovery phase is a process Eximsoft follows to finalize the specification or the requirement of the system. For Phase 2 trial, the schedule may be shrunk within two months assuming Airport will not deviate too much from the current available functions.

## F. References

SMA is an innovative software implementation to replace hard meter technology of the last 75 years and it is so new that it has not yet been tested in any municipality environment. That is why Eximsoft is very willing to work with the Indianapolis (a University Airport) for the state of the art technology trial. Moreover, there is no complex hardware and field networking involved requiring not much elaborate testing. In addition of parking application, Eximsoft has worked on many complex software projects. Their references are furnished below. Eximsoft has completed many complex software projects with different other clients as shown below and the Airport is free to contact all of them.

Name Of Person	Company Affiliation	Phone Number	E-mail Address	Project Type
Santanu Dutta VP-Systems Engineering	Mobile Satellite Ventures LP 10802 Parkridge Blvd Reston, VA 20191-5416	703-390-2734	sdutta@msvlp.com	Mobile E-commerce
Robert Block President	3-DBT 2695 Spearpoint Drive Reno, NV 89509	775-826-2611	rsblock@3-dbt.com	Accounting System
Lindsay Kent Executive VP, R&D	Entrust 9 Auriga Drive Ottawa, ON K2K 3E7	613-270-2754	lindsay.kent@entrust.com	Internet Security Product

## Phase 2 Proposed Requirements – Field Test

We are proposing moving away from the hardware oriented solution to a more software oriented solution (part of IT infrastructure) using Internet and Cell Phone. It can provide two major advantages: over all margin improvement and scope of new revenues even without rate increase. Parkers can be grouped in many ways such as regular frequent users, out of Airport visitors, Internet/Cell Phone savvy users, and traditional parkers (not looking for any change at all). Account setting and advance payments using credit card, cash, and check may be the solution for many groups. The elegant and ideal way to do is to follow steps highlighted below applicable for meter or non-metered spaces during the Phase 2 trial. Eximsoft proposes that the solution is hosted in the Airport's web site for a trial. It will be a learning process by Airport given that it is different and unique from the traditional system. Eximsoft will do all necessary work to bring parking services as one of the main service component in the Airport web page. Airport employees or parkers will also be trained during this unique software installation to configure the system with all existing parameters or new parameters in the host server for selected spaces during the trial. In fact, all spaces can be included in one go with no additional cost including an option to integrate meter space or no meter space requiring no electrical, mechanical connections. For non-meter space, a space marker will be required. The Airport will provide necessary enforcement and payment collection methods via Internet or cashier terminal. There is no change in the enforcement process except all data can be in the hand held device on-line and real time if a WiFi network is in place. No key or coin collection in the field is required and reason for vandalism is eliminated. Parker's perspectives are described for the Phase 2 trial below:

### Step 1 (Registration and Editing Information Using Internet)

- Go to the web site of [www.perkpark.com](http://www.perkpark.com) (it is a trial web site now and it will be converted to Airport web site when deployed for live customers). When installed in the field it will be Airport's web site

- Click to the PerkPark) demo icon on the right hand side (or Airport designated web site later)
- For the first time user (having no phone log in code or user ID and PWD) click on Register for an account
- Make a payments so that your account can be decremented as you use parking privileges
- Remember ID and PWD you use for future editing of the information
- Register yourself with all relevant information (Form may further be customized in enterprise solution if required) and then click submit
- You can add multiple addresses or multiple vehicles as prompted
- Once you are successful, the system will give you a phone log in code or PIN
- Remember this code, you need this for Interactive Voice Activated Parking Operation using cell phone to enhance your mobility of parking

You can edit the information in your profile any time you like provided you remember your ID and PWD. If not, you can contact the Airport administrator for resetting the information.

## **Step 2 Airport Reserved Parking (Using Cell Phone for Activation)**

- Drive to the Airport and look for find a marked space during reservation. Alternatively, you can go to an empty space of a reserved parking lot
- Call a Voice Activated Number (877-744-8518) using your cell phone
- The system will welcome you and will prompt for a Phone Log in Code or registration code that was spit out during registration (it is in the form of four digits now, e.g, 1296)
- Punch that code for the system to recognize you
- The system will confirm the recognition by asking to punch 1 for Yes or 2 for No
- The system will locate your record and will indicate so by saying 'your record has been located'
- The system will prompt for selection of parking scenarios. There are 5 options (1 for street parking, 2 for airport parking, 3 for event parking, 4 for garage parking and 5 for bus riding program)
- Once you make your selection, the system will prompt for terminal number
- The system will prompt for daily or hourly parking and make your selection
- The system will ask for day when reservation should start (today or tomorrow)
- The system will prompt for number of days or hours of reservation required
- The system will indicate the total amount of charges for your selection based on the tariff of the Airport parking
- At the end, the system will request for deactivation

## **STEP 3: Airport Parking (Using cell Phone and Deactivation)**

You can deactivate on your own after the expiration of your time or before it. If you deactivate before the expiration of time, you may be given a credit for the left over time depending on the Airport regulation. If you forget to deactivate, there are different options to be customized so that you are not charged for an indefinite time. One such option is to receive short messages via cell phone or an e-mail or the system can deactivate based on enforcement officer's report when a different car is parked on the same spot.

Of course, we realize that there may not be a single method for all parkers. There are many exceptions. For example:

- ✓ Parkers not having access to Internet for registration but has the cell phone
- ✓ Out of Airport visitors not registering prior to the journey but has the cell phone
- ✓ Parkers who do not have neither cell phone nor Internet

Eximsoft's solution has considered all such exceptions. Users, out of Airport, can go at the web site before visiting and can make arrangements by 800 calls or using Internet and getting a code to park. Many groups

can also print out a bar code and display it on the dash board. Some can use Airport's Kiosks office to get parking privilege on the spot. Eximsoft recommends that Airport sets up a Kiosk center with 15/20 minutes parking limit to buy permits of parker's requirement. 800 call operator and Kiosk centers could be combined in similar office settings. Some of these could be part of future capabilities.

## Training and Support

Eximsoft will work with the Airport before and after the software is installed for as many days as required to make it bug free. All analysis of bugs will be conducted so that similar bugs do not reappear. In addition, load test will also be conducted for a kind of stress test with live customers.

## Training

Eximsoft will provide three sets of training. They are:

- ✓ Computer based training (CBT) – It will be based on an audio-visual computer tools. Employees can have their own CDs to train themselves after class room training. In addition, it can also be uploaded in the AIRPORT server if required.
- ✓ Class room training – Eximsoft prefers a class room training of 10 employees at one time for one week. It will be conducted by two experts. Unit costs have been given and any extra classes can be conducted based on the quoted rate.
- ✓ Training the trainer – this may be easier and cost effective way to train all employees.

All training materials will be updated as and when functions and procedures change.

## Documentation

One set of documentations covering following areas will be provided free of cost:

- ✓ Software maintenance procedures including revisions, history
- ✓ Software source listing of all modules installed
- ✓ User manuals
- ✓ Computer based training (CBT)

The price of hard copies in hard binder has been quoted on a unit basis. Additional hard copies can be purchased at the quoted price. All documents can be stored on-line to avoid recurring costs. All documentations will be as per industry standards.

## Software Documentation

M indicates that the system meets the requirement as described.

Item	Description	Conformance Indicator	Comment
	Source Listing: Source listing of all program, modules, subprograms, and Vendor supplied utilities.	M	
	Source Module Description: All source modules, including subprograms, shall be described completely as to their operation and functions.	M	
	Cross reference Listing: Cross reference listings shall be produced relating each data name to the location of every other statement referring to it, and relating each routine to the location of every other routine calling upon it. The list shall be exhibited as a sequential table in alphanumeric order.	M	

	A schema of all database tables and fields.	M	
	Detailed functional description and data input/output values for any API's, including web services, XML exchanges, etc.	M	

### Computer Manuals

Yes, all information and peripheral software required and related to the application in question will be documented and provided while testing in the field before handover.

Eximsoft will follow all local and International laws while supplying equipment or software products. It is certified that Eximsoft has the exclusive the Intellectual Property (IP) right of the software product (SMA) proposed here for the RFI. We will conform to all other terms and conditions as understood in these subsections. Below is a table of explanation addressing the total business aspects of the Airport's parking problem and Eximsoft's solution approach to initiate new business practices.

**Table 5: Business Solution**

#### Business Need

#### EximSoft Solutions

Parking Web Page For All to View	Parking information can be on-line with partitioning of info between general user and the administration
Online Permit sales and/or delivery for increased fee collections	Parking Permit Module will provide functionality to sell Permit online and collection of fess in advance.
Account Management Of Clients	Setting up a/c by user and managing his/her activities going on-line reducing Airport's burden
Reduced work load with automated functions and computerized functions integration	The proposed Parking system will be web based with user friendly interface for system functions partitioning
The Integrated system must use a relational database, and must interface with the Existing system, if any	The parking system will use relational Postgresql database. Such links (db links) allow an oracle database to connect to another database.
Online parking citation processing/adjudication	Parking Citation, Appeals hearing modules will provide timely citation processing / adjudication.
Handheld citation writers	The parking system will have provision for Handheld citation writers
Report Writing for better customer communication	Jasper or similar Report Server generating and customizing all kind of reports
Letter Initiation	Blank Data Field Population Of RDBM
On-Line Training	For both admin and parkers providing platform for many other services
Troubleshooting and support	Availability of trained technical people on-line 24x7 once outlined in the agreement
Cashier Terminal Drawer Reconciliation	Each cashier or CSR is managed by user id and password. Drawer can be exchanged but not the account. Cash will be reconciled first by cashier and type of collections such as check, cash or credit card not necessarily by drawer.
Other desired functionality	The software has the flexibility to add new services by the customer if desired. Jasper tools are used for all reporting functions. Standard letters can be scheduled for automatic generation with the population of fields from the database.

## Cost or Price Proposal

Totals have been done under certain assumptions and estimated efforts. Unit rates will not change but efforts and resources may go up or down impacting the total. The cost structure has different components that have been itemized below. Included in them are:

- Initial Consulting Fees if required
- Customization & Development Charges for additional functionalities & systems integration
- Software Licensing of existing modules as described in the response
- Software Support and Maintenance
- Training Materials Preparation On-line or Class room
- Installation and Testing
- Travel Related Expenses if applicable
- Class Room Training
- Hand Held Device
- IVR Ports
- Web hosting if required (Ashville, NC based hosting company, Netriplex)

The rate structure has been given so that the over run and the under run can be measured based on the actual work volume for which Airport will be charged. A team of 5 to 6 people at the same time will be working on the project to schedule a quick delivery. Consulting fees, development charges and training materials are one time items unless the system is upgraded with new software release. The rest will vary depending on the duration and terms and conditions.

Software licensing fees is by number of spaces per location with a minimum of 3000. There are no concurrent or other hidden charges. For numbers exceeding 3000 and up to 7000, licensing fees will be reduced to \$15 per space per location. For number exceeding 7000 and up to 10,000 licensing fees will further be reduced to \$10 per space per location. Support and maintenance cost will be 30% of the total installed software cost for normal office hours. 24x7 maintenance can be negotiated separately with volume business.

### Resources:

- Project Manager & Customer Liaison - 1
- GUI Resource - 2
- Java Resource - 2
- Testing Resource - 1
- Project Lead - 1

PROJECT COST	Units	Units of Measurement	Unit Rate	Total Cost
<b>A. Activity related direct project cost</b>				
Initial Consulting Fees:	50	Man hours	\$50.00	\$2,500.00
Customized Development/Design Costs:	800	Man hours	\$25.00	\$20,000.00
Other (please specify): Core S/W Licensing	Up to 3000	Meter Spaces	\$20.00	\$60,000.00
Cost of Training Materials Preparation	60	Man hours	\$25	\$1,500.00
Sub-total A.				\$84,000.00
<b>B. Other Costs (please specify)</b>				

Cost of Travel (2 resources/2+1 Trips)*				\$9,200.00
Cost of Accommodation (2+1 trips)*				\$4,950.00
Per Diem (2 resources / 3 days / 2+1 trips)				\$680.00
Sub-total B.				\$14,830.00
C. Annual Maintenance Cost (30% of the direct cost excluding Professional & Training fees)				\$24,000.00
D. Training Cost including Documentation				\$15,000
<b>TOTAL PROJECT COSTS</b>				<b>\$137,830.00</b>

In addition, other associated cost items to get the service started are shown in a Table below.

**Table 6: Associated Cost Items**

Description	Startup Costs	Unit Cost	Units Required	Total Cost	Comment
VOIP Port for IVR	0.00	\$700	2	\$1400	Will need local telecom support
Handheld Device as per our spec	0.00	\$3000	4	\$12000	No charge if you supply your own
VOIP charges and Maintenance per year	0.00	\$650	1	\$600	Third party vendor
Hosting	\$3000			\$3000	No charge if you arrange your own hosting locally
Hosting Maintenance per year	0.00	\$2000	Per month	\$24000	No charge if you arrange your own hosting locally
Ticket with Airport Branding	Airport may qualify a volume discount				On an actual basis depending on the Airport branding of hard or soft ticket
Credit Card Processing Fees	3% of transaction amount				Cannot be assessed now
Total (1st Year associated items)				\$41,000	Yearly maintenance will stay

A 20% discount of the total project cost is possible when a long term contract of 24x7 hours support and maintenance is negotiated.

### **Additional Background and Special Condition of Applications Deployment**

Eximsoft is capable of introducing the new application without changing the current business process other than technical enhancements to the process as applicable or as requested. The full blown application developed by Eximsoft is not proposed here in response to the RFI. Many options are kept open for future implementation. All contact addresses, e-mails, subcontractors to be used have been documented in two documents. Web sites have also been given. Eximsoft International takes all responsibilities for the official communications of agreement, changes, delivery, etc.

Web based parking system (SMA) is a joint vision of three companies – Ericsson ([www.ericsson.com](http://www.ericsson.com)), Entrust ([www.entrust.com](http://www.entrust.com)) and Eximsoft ([www.eximsoftint.com](http://www.eximsoftint.com)) but the IP right of SMA is with Eximsoft. Each company had three different interests on this project: killer application for wireless, mobile e-commerce for financial transaction and system integration of many technologies. Our demo at [www.perpark.com](http://www.perpark.com) is an example of a working system. We feel the intent of this RFI can well be served if Eximsoft's SMA can be deployed as ASP for parking services at the Airport. The core capabilities of SMA have been developed using the guiding principle of four papers published in the Parking Professional Magazine. They are:

- 'Enhancing Parking Security Against Terror Threats' by Amalendu Chatterjee, May, 2004 Issue, page 37
- 'Decriminalization of Parking Services – a paradigm shift' by Amalendu Chatterjee, November, 2006 Issue, page 29.
- 'Parking's Impact on Intelligent Transportation Services for Greener Evolution' by Amalendu Chatterjee, February, 2009 Issue, page 26, Part 1
- 'Parking's Impact on Intelligent Transportation Services for Greener Evolution' by Amalendu Chatterjee, March, 2009 Issue, page 40, Part 2
- 'Parking Services of the 21st Century and the Stimulus Package by *Amalendu Chatterjee, March, 2010*

In addition, there were news articles of the approach in local papers. In our mind, core capabilities and its RDBMS can cover all mandatory requirements highlighted here. Here is our analysis - after careful consideration of the requirements outlined in the Airport's Parking RFI and thorough evaluation of the many potential solution frameworks and architectures that might fulfill those requirements, EximSoft has summarized the business need and related technical solution scope through out the response.

## **Minimum Hardware Specifications**

EximSoft products are designed to run on a full range of hardware and/or operating system standards. While numerous hosting options are available, the proposed solution will represent the optimal hardware configuration for the Airport Parking System. The solution will be configured on the stated Airport requirements, addenda and sizing analysis. While we are confident that the proposed solution will meet Airport Parking system requirements, EximSoft expects to refine the solution once a thorough joint technical requirement effort is complete. EximSoft will work with the Airport IT organization to ensure the final platform solution will meet the parking needs. Eximsoft will propose a multi-tiered approach leveraging clustering and fail-over technology to provide the required performance and availability at the optimal price point. The system will be flexible enough for Airport to define and develop new custom applications.

Generic software will be licensed as one web hosting application of the Airport. Database licensing for concurrent use will be discussed during the implementation phase. If Open Source Database is used, licensing may be minimized but integration efforts may be more. Many features and functions available with the Generic Software will be shown during the demonstration phase before the signed contract. Firm price of unavailable functions and features will be available during the discovery phase of systems (shown above). Bar coded permits are available with the base software as part of the web hosting services. Geographical Information System (GIS), if available, can be integrated to implement PARKQUEST (similar to MAPQUEST or way finding system) for parking areas and parking spaces that will be on-line for viewing or over Internet enabled cell phone. Customers are allowed to update their profiles and the limit of simultaneous users can be met. The flexibility of database to meet wide variety of service demands now and later can be seen the way different fields are defined.

## **A. General Requirements for Transition Plan**



SMA fulfills all criteria outlined here for a stand alone solution. All up to date tools, client server browser technology, java language and web services have been used to conform to these requirements. We recommend that the project is started as a stand alone application for a trial for several months so that both administrators and users are educated and trained before total system integration can proceed. Some marketing efforts are required for the acceptance of changes in business process required for introducing web based parking applications. Below are some of highlights of capabilities to initiate such efforts using web based tool. Once the system is fully functional, additional integration can be done using off-line process first and then on-line.

## **B. User Security and Control**

SMA uses a common authentication system through LDAP on a directory server. The proposed system's schema is for authentication of users and customers. There may be a capability to enable parking customers to use centralized LDAP authentication using the Airport's Username. There is also system generated password management for an application specific login User ID in addition of Airport's Network ID. Security is again partitioned between system administration and the common user. Again, there are also different levels of security among administration depending on his/her level of authority. Supporting five levels of such security are ok requiring the higher level overriding the lower level decision when required. In addition, all reports are not accessible to everybody. For example, field officers may have reporting responsibilities only and he can take some action based on the decision from his head office in response to his query. Other features not conforming now will be addressed during the discovery phase.

## **C. Citation Management**

This is another part of the application module where various types of citations, appeals, hearings are handled. A citation (a notice of monetary penalty) is issued for parking a motor vehicle in a restricted place or for parking in an unauthorized manner. Citation can be issued in various situations. Access to it is allowed on the need to know basis. Information can be partitioned for different viewers. For example, final decisions of the appeal can be viewed by the parker. All steps of decision making process can be viewed by authority level of the administration. System can allow customers to retrieve information regarding outstanding parking citations and to submit appeals online. System can provide a module that links directly to citation and hearing records that will track the appeal hearing process. System allow the user to enter, view, and print citations by means of either an ad-hoc query or batch basis all information normally associated with a citation, such as:

- Ticket number
- License number/Yr./State (or Province)
- Plate Type
- Meter number
- Date Issued
- Time Issued
- Officer Code
- Location Code
- Violation Code
- Vehicle ID Info. (Make, Model, Color)

Most of features such as detailed information on fines, status update with the help of note, ability to track changes, and history including payment during the field operation, adjustment of fines amount, hearing arguments, dates and time of those hearing, restriction of full edit of citation, scofflaw information via handheld device, generate and print notification letter, aggregate violations, officer's identification, one or more violation per user are available. Missing capabilities will be available through the discovery phase for system integration. For example, reassign citation to a different user, post payments without leaving the screen, automatic surcharge will be defined by joint activities during the discovery phase of the project. All indicated APIs will be available but information of data exchange for required functions will be developed

after the agreement. Below is a screen shot for the enforcement officer in the field that may be customized for different operations:

ParkPark		
User Vehicle Status Details		
Lot	No of Car	Date
East Lot	80	2009-04-22
Vehicle Details		
Plate Number	Out Time	
<input type="button" value="Refresh"/> <input type="button" value="New Citation"/> <input type="button" value="Logout"/>		

#### D. Citation Appeals Management

The proposed system can generate/print and/or e-mail appeal decisions and/or letters on demand for a single hearing or in batch for multiple hearings. This feature must allow the user to call up one of several standard customer-defined appeal response letters in the database file and have information about the citation, customer and vehicle information automatically entered on the standard letter. System will automatically generate letters/e-mails for hearing notification/results notices without the user initiating the process. System shall contain a user-defined appeal note code that allows users to read why an appeal was upheld/denied as well as the ability to print this information on letters generated within the software. System can display a message if a citation is currently on appeal. System will allow for user-defined appeal types (oral, written, 2nd appeal, etc.). System will generate user-defined appeals fee. System can contain a user-defined appeal note code that allows users to read why an appeal was upheld/denied as well as the ability to print this information on letters generated within the software. System can include a judgment decision note field that can be incorporated in the automated hearing notification letters generated within the software.

System will provide an appeals hearings module which will track the appeal hearing process. System will track the appeal assignment (specific hearing officer or appeal board), comments, appeal status code, appeals hearing schedule with dates and times. System will track the citation appeal and hearing process. When an appeal record is created, the information relating to a citation must be automatically copied into the appeal record as the citation number is entered. Systems have the ability to require an appeal to have a hearing or apply the result with requiring a hearing. System will provide built-in appeals hearing schedule report. User can insert appeal location to the system. System can define hearing date and time.

Web based services have registration/reservation confirmation feature to interact with customers via e-mail. Additional functions and features can be customized on an agreed upon terms and conditions using on-line retrieval of information and updating information using proper security authentication. Database field and type description given in the previous section will implement these additional features. During design phase of negotiations, detailed mechanism will be agreed upon for implementation within the IT infrastructure of the web hosted system interacting with Airport records/information. All items in the list not available in the initial SMA will be conformed in 6 to 8 months window. We prefer **step up rates** with automated collection from the account beyond the regulated time limit replacing the traditional e-ticketing and collection procedures using judicial process.

#### E. Permit Management:

There are different ways to handle permits, their rates with types (short term, long term, car pool, etc.) and there are many ways to confirm permits being sold. Our permit software module can allow permit sales in three ways: permit sale through web, permit sale through voice and on-line permit sale. Rates (daily, weekly, monthly, etc.) can be changed on-line real time as frequently as desired by the authorized personnel (IT people) using changes in the software. Inventories of these permits by types (return permits, expired permits, lost permits, reissuance of duplicate permits) are kept in the system using the correlation of identities. All will be recorded in the system using web services and the access will be available to people based on administration security levels. Additional hardware will be required to scan different on-line permits that will work in conjunction with access control system in place at the Airport campus. Options of handling permits may be many: (1) bar code based permits (2) hard plastic with Airport logo and (3) smart card based permit. Both may be implemented but the former is preferred based on credits or pre-collection of fees. Advantages of web-based permits are many such as:

- Expiration can be extended through the web services by updating the records on-line without physically visiting the office.
- Color coded bar code may be printed to indicate special parking events with special rates
- Control of multiple permits by one name or agency
- Transfer of bar code to a third party for authorization.
- Enforcement via handheld device becomes simpler.

Access can also be controlled using punch codes (PIN) with a time limit as is done in the car wash facilities. Each type of permit will have time stamp and must be validated at each entry. Return permits will be credited and access will be denied. Records of such permits will be stored for different tags (driver, car type, address type, etc.) as applicable. Such information can be restored for re-issue of permits if necessary.

Eximsoft is a Software Resource Partner (SRP) of Federal APD and is familiar with their access control system. Eximsoft can also work with similar access control system but information has to be available during the discovery phase. Generic software will be licensed and associated features and function associated with the generic software will be available during installation phase. It is all advanced collection of fees before allowing printing bar coded permits or mail color coded permits. Airport specific functions and features will be available based on negotiated terms and conditions. Our web host services can conform to all items identified in the RFI.

## **F. Permit Waiting List**

All these features are part of permit sale module in the application program. Our waiting lists are on the basis of request that goes through regular update procedures once certain permits are withdrawn. We have a proximity based permit sales with guaranteed reservation by lot/floor and space. We can also identify VIP permits for senior members of the Airport or any other executives. Lottery based permit sales will be defined during the exploratory phase. A routine automated report can be generated to show the waiting list limit, numbers cleared, over flow of limits.

## **G. Vehicle Management**

Vehicle management is part of the registration process where each and every parking user registers in the system using a browser or over the phone. Certain information such as address (permanent, office or temporary), phone number (cell phone, office phone and home phone), e-mail address, number of cars owned, car types (pull down menu) are collected. Once they are collected, they are correlated together to a particular name, organization or multiple owners. In exchange of this registration, system provides a password and PIN code for future access confirming the input given. The system administrator or the parker can edit the information as needed. All edited information will be reconfirmed by e-mail for authentication. All features/functions of this section are available with the core system except few such as: DMV/MTO plate lookup, history of vehicle information, reassign of vehicle to another account once the transfer occurs. We will have the proper API to exchange data. Once data and their formats of DMV records are available through this API, additional function can be integrated as part of the joint exploratory document. To our understanding, DMV/MTO records vary from province to province and state to state. CD exchanges of DMV/MTO records are also possible to be integrated.

## **H. Account/Payment Management**

One account is generated for each customer with all correlated information during the registration process. The credit card information or paycheck can be tied in for all Airport employees who buy permits or parking related services. In exchange of this account, a unique PIN and a password are issued against that individual. All activities against the account are recorded with time stamps. Information contained against each parker is again partitioned for access by either the user himself/herself or the system administrator through the Internet using web browser. The user can print his/her own information for his record as long as he/she has the proper user ID and password. All functions/features of payment plans, manage NSF checks, bad address, tracking more than one ID records, split payments, unique ID in the same screen are available in the core modules.

## **I. Handheld Device**

Handheld device selected here will be priced with associated printer. Eximsoft does not manufacture any hardware. Three companies Eximsoft has worked for developing soft meters are: Casio ([www.casio.com](http://www.casio.com)), American Micro System Ltd ([www.amltd.com](http://www.amltd.com)), and Oneil Printer ([www.oneilprinters.com](http://www.oneilprinters.com)), and Radix ([www.radix-intl.com](http://www.radix-intl.com)). They will come with accessories necessary for the enforcement officer to do the job of e-citation, enforcement, uploading, downloading of data, scanning bar code, printing, etc. Eximsoft can develop the additional interfaces for additional function (such as single input for multiple searches in the database) beyond the current features if selected based on the GUI capability of these devices. Ticket writing can be expedited with color coded matching the database information in the handheld device between authorized and non-authorized vehicles by simple click of license plate number or scanning LPR. Applications developed on the hand-held device can also be ported to any portable PC. Our application can work with any other handheld device of Airport's choice and available in the market such as Symbol Technology. All such devices will have two way communication capabilities with an option of WiFi interface or the wireless interface to download and upload relevant information. They come with one year manufacturer's warranties. Applications developed on these devices will have similar warranties with inclusion of extended clause if requested. In the absence of WiFi, batch processing of enforcements using these devices is also possible.

All other requirements are noted for compliance during signing the contract. The system can be improved with SMA over the current ticket writing process for ill gotten money. With advanced payment options of SMA and a credit account, citations and judicial process can be minimized as indicated in the previous section with electronic records of every time stamped event. Eximsoft has introduced 'Step-Up Rates' instead of citations for time limit expiration.

## **J. Handheld Software**

Our system use Casio, Radix or AMLTD's M7100 hand held device for all citations writing. It comes with necessary interfaces to communicate with central database for validation of permits. All real time on-line transactions are possible with this device with different security level to look up tables for information. It has also memory to do batch processing locally if required. Our citation software module has ability to allow for automated (handheld device) data entry of citations. The handheld device has the capability to download data color coded to identify users with different records such as student, staff, VIP, defaulters, payment schedules, or any other criteria chosen by Airport. No color code is required when to upload data such as on the spot payment, citation record, credit card payment using cell phone. Some of capabilities are beyond the IP licensing software. Web based services have registration/reservation confirmation feature to interact with customers via e-mail. Additional functions and features (not supported now such as time lapsed between citation writing and breaks/meals, time chalking, automatic repeal (default) for previous location and violation code, defaults for different provinces/states with vehicle classifications) can be customized on an agreed upon terms and conditions using on-line retrieval of information and updating information using proper security authentication.

## **Project Management Methodology**

EximSoft would follow the following standard methodology for the successful completion of the two-phased project. Each activity will be performed for both the six month trial (Phase 1) as well as the permanent, Airport-wide street parking implementation (Phase 2).

### **Activity 1 - Project Initiation / Kickoff**

#### **Description**

The objective of this Activity is:

- To review the statement of work, as described in the RFI and agreed upon by the parties.
- To ensure a common understanding and make any other key decisions about the project definition topics.
- Gain commitments (including availability) of the Airport's senior management team.
- Confirm roles and responsibilities of Airport and EximSoft project teams.
- Identify Project Baselines and corresponding software configurable items.

This establishes a common understanding and offers a statement of objectives, benefits, scope, plans, resource structure, risks, structure and responsibilities.

### **Activity 2 - Project Management**

#### **Description**

EximSoft will dedicate an Engagement/Project Manager who will manage all issues to deliver the project successfully.

#### **EximSoft Project Management Responsibilities**

The following will be performed as part of the project management:

- Timely communicate project status based agreed-upon frequency (e.g. weekly status report)
- Manage project delivery/issues
- Manage project dependencies
- Conduct project review
- Administer change management
- Manage client expectations

#### **Client Responsibilities**

- The success of the project will depend on the Airport assigning a dedicated person who will be our single point of contact related to all project issues.

### **Activity 3 – Development Scope Sign-off**

#### **Description**

The objective is to finalize the scope of development as documented. Any change(s) in the requirements specification will be managed through the Change Control Procedure described later in this section. The subsequent activities as defined in the "Statement of work" will start after the Airport has confirmed and signed off on the Requirements Confirmation Report (RCR). Any deviation from the approved RCR would be managed through change control procedures.

#### **Activity**

EximSoft & Airport will discuss the entire project scope and if any requirement changes, EximSoft will document the change(s). Also, Airport and EximSoft will determine acceptable time period for obtaining RCR signoff.

**Deliverables**

Eximsoft will deliver

- RCR.
- Change control forms with revised schedule, and cost, if any.

**Customer will deliver**

- Signoff on RCR within agreed-upon time period.
- Approval of change request forms, if any.

**Completion Criteria**

On the acceptance by the RCR, this activity is closed.

**Activity 4 – Setup, Configuration, and Implementation**

**Description**

The objective of this Activity is to setup, customize/configure, and implement PerkPark SMA™ for the client as per the approved RCR.

**EximSoft Responsibilities**

- Installation and initial configuration of PerkPark SMA™ and required backend applications at Airport's IT Data Center.
- Development and "Indianapolis" branding of website components for the solution as per the RCR. Units and modules will be coded and tested before the total system integration.
- User setup and configuration for administration and enforcement.

**Client Responsibilities**

- Airport will provide EximSoft with all visual design elements for Indianapolis PerkPark SMA™ like logos, banners, etc. that are required for the system in digital format.
- Airport will be responsible for providing all the necessary inputs in a timely manner for EximSoft to perform activities mentioned in EximSoft responsibilities.
- Eximsoft can assist clients in areas of unknown and difficult inputs if requested.

**Deliverable**

Functioning of PerkPark SMA™ Web Portal for Parking as would be defined in Requirement confirmation report.

**Completion Criteria**

Same as 'Deliverable'

**Activity 5 - Production Rollout**

**Description**

The objective of this Activity is to make the proposed solution available in a production environment located at the Indianapolis IT Data Center. EximSoft is a development partner with IBM WebSphere and, if preferable to the Airport, will be able to port the application using IBM's greener and smarter planet platform of web hosting as an option.

**EximSoft Responsibilities**

- Installation / Deployment of the solution as per Requirement Confirmation Report at Client's premise (if not web-based).

**Client Responsibilities**

- Airport will provide required suitable skilled employees to obtain an operational understanding of the production environment and the operational procedures of the PerkPark SMA™ solution in order for the Airport to be better prepared when it is

determined that the environment is to be transitioned to Airport IT responsibility. This will also help smooth the transition from development phase to the operation phase.

- Airport will provide strategically placed signage with instructions on using cell phone-based on-street parking payment system.

**Deliverable**

- Production Ready Environment
- User Documentation and Administration, Enforcement, and System Overview Training Materials (online and Class Room Setting)
- Strategically placed and informative signage instructing in the use of the Airport's new PerkPark™ on-street parking payment system.

**Completion Criteria**

The solution shall be deemed to be production-ready when above points mentioned in the above EximSoft responsibility section is completed.

**Activity 6 - Training**

**Description**

The objective of this Activity is to train & guide Airport Parking Services personnel as designated by the client.

**EximSoft Responsibilities**

- Will conduct up to 5 (five) days of end-user training in a class room setting covering System Administration, Parking Enforcement, and Technical (System) Overview. In addition, training materials will be developed and downloaded at the Indianapolis PerkPark SMA™ Web Portal for on-going online training.

**Client Responsibilities**

- Airport will instruct and require affected personnel to attend role-specific training.
- Airport will arrange for training rooms at its own premise with internet connection in order to conduct the training sessions.
- Any additional training if required would be separately estimated and would be billed accordingly.

**Deliverable**

- 5 (five) days training session on Airport premises.

**Activity 7 – Marketing of New On-Street Payment for Parking**

**Description**

The objective of this Activity is to develop and establish a marketing campaign designed to educate and encourage citizens to move to a new paradigm for paying for street parking – one that is cash-less, more convenient, customer friendly, and offers the ability to alert customers of impending lapse of parking time, and extend parking times (with possible stepped-up rates) through SMS messaging. The result being better utilization of all available street parking in down Airport Indianapolis. We anticipate that this activity will, at some level, be maintained throughout the life of the contract.

**EximSoft Responsibilities**

- Work with Airport Public Relations Office to develop and produce any marketing collateral to be used in this effort.
- Work with area newspapers (including the Durham Morning Herald, News and Observer, Daily Tar Heel, and Independent) and radio news personnel to arrange interviews with

Airport Public Relations and Business Management Department management personnel on the project.

- Work with local businesses and the University to educate them on the ease and benefits of utilizing Indianapolis Airport PerkPark SMA™ On-Street Parking Payment System.
- Depending on the need, EximSoft will schedule several Airport hall meetings with local media, business owners, University staff, and University Student Government in order to communicate the Airport's vision, the solution to be leveraged, the level of support that they will receive, financial matters (reporting, payments, etc.), etc.
- Determine measurable milestones with Airport parking officials.

**Client Responsibilities**

- Be available for collaboration in developing marketing materials.
- Provide meeting facilities, if required, for Airport hall meetings.
- Provide copy services for marketing materials as needed.
- Provide all signage advertising the program.

**Deliverables**

- Weekly or monthly reports on progress to Airport

**Activity 8 - Project Closure**

**Description**

The objective of this Activity is to formally declare the project as completed and closed.

**Eximsoft Responsibilities**

- Ensure that all the activities for which EximSoft is responsible are completed, as agreed upon with the Airport.
- Ensure that all outstanding issues concerning the project have been resolved and are completed to the Airport's satisfaction.

**Client Responsibilities**

- Sign the project closure form to signify the project closure.
- Provide written feedback to EximSoft on project performance.
- Make sure all outstanding invoices are paid promptly.

**Deliverables**

- Project Sign off
- Project feedback form

**Ongoing Support (OGS)**

The Indianapolis Call Center will be locally-staffed to provide 24X7 support and will provide the following:

- Customer/parking consumer support for parking reservations and user registration using toll-free 800 number.
- Customer/parking lot owner support for managing issues related to owners (enforcement, payment, reporting, etc.)
- Email and toll-free 800 call handling for different levels of support (Tier 1, Tier 2, and Tier 3).
- Tier 1 will be handled locally with a resolution period, depending on severity, of 1 to 3 hours.
- Tier 2 and Tier 3 support may be handled remotely. Resolution will be between 4 and 24 hours.

As part of the OGS agreement, the Airport will receive periodic patch updates (usually released quarterly). New version releases will also be made available to the Airport.



- There is a section on the PerkPark SMA™ web page for lodging customer suggestions, questions, complaints:

## **Project Team**

### **Amalendu Chatterjee (VP, Technology, EximSoft):**

A Nortel and Fujitsu alumnus, Dr. Chatterjee did pioneering work in the area of packet networks, ISDN, digital switching, ATM and wireless technology. He brings over 25 years of particular expertise and specific knowledge in the information technology and telecommunications field. He was Director, Global R&D for Fujitsu and published technical papers on topics of current technical subjects. He led a group in the creation of the first broadband superhighway in North Carolina using ATM technology for distance learning and telemedicine applications. Since leaving Fujitsu, Dr. Chatterjee has acted as a technical advisor to Network Optic Communications and Quad Research. He earned his Ph.D in Computer Communications Networks at the University of Ottawa, Canada.

### **Antoanetta (Toni) Dertlieva (Director, Project Management, EximSoft)**

#### **Career Summary**

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- Results-oriented people and project manager with extensive Information Systems and software development experience.
- Proven record of leading organizations through changes in technology, markets and business directions.
- Successful management of end-to-end development and support of multiple large, complex systems.
- Strong management skills in the areas of building, mentoring and leading multi-functional teams.
- Concurrent management of multiple products and releases through the entire software lifecycle.

#### **PROFESSIONAL EXPERIENCE:**

Working with non-profit organizations doing research, project definition and management for local and international projects. Volunteering as a Treasurer for a children-oriented organization. PEOPLESOFT, Inc., Pleasanton, CA

Full responsibility for product strategy, design, development, support, quality assurance and documentation of the Education & Government Financials Product Line, which consists of 12 large and complex products, used by several hundred customers. Additionally managing the development and delivery of Financial systems by an offshore 3<sup>rd</sup> party. Managing the enhancements to existing products as well as delivery of several new products from concept through deployment. Took over a small, unsuccessful 17-person group and grew it to a motivated, high-performing 120+ people organization with a \$17M annual operating budget. Managed the turnaround of a weak, problem-ridden set of products to a mature, stable offering with vastly expanded functionality, utilizing the latest in Web technology.

### **Ed Johnson (VP, Operations, EximSoft)**

#### **Career Summary**

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Business-minded technology executive with record of identifying opportunities, analyzing operations, and developing creative solutions. Valuable in dynamic and multi-faceted global environment. Adept at enhancing performance while reducing expenses via process and technical improvements. Mr. Johnson has served in senior executive IT and operations roles with several companies, including LGS/Bell Laboratories (CIO), NC Department of Justice (CIO), Cott Beverage (IT Director, Business Applications and Operations), and AlliedSignal (Director, Information Systems & Services). He has led the successful implementation of multiple ERP systems for several global companies and government organizations. He has also been nationally recognized as by several technology publications for his vision and leadership with regard to

Service Oriented Architecture and is a well sought-after key note speaker. In 2005, Mr. Johnson delivered the key note address at the annual Microsoft CIO Summit in Redmond, WA.

**Core Competencies**

- Strategic Planning
- Finance & Cost Control
- IT Outsourcing Mgmt
- Organizational Dev'mnt
- Global Operations Mgmt
- Business Information Assurance
- IT Arch & Integration
- Merger & Acquisition Facilitation
- Project Leadership
- Process Optimization
- Contract Negotiation
- Supply Chain Mgmt

**Amitabha Sinha (VP, Development, EximSoft/Axsys):**

**Career Summary**

A Sun Microsystems certified Enterprise Level Architect with almost 10 years of professional IT experience in various projects such as, Architecture Recommendation, Enterprise Application Integration, client-server/e-business solutions. Responsibilities include project management, developing and operating business solutions.

- Sun Microsystems certified [SCJP, SCWD, SCEA Level III].
- BEA certified Enterprise Solutions Architect.
- Became one of the first 2000 people in the world to become the Microsoft Certified Solution Developer (Early Achiever MCSD for Microsoft .NET) and Microsoft Certified Application Developer (MCAD) in .NET technology.
- Master Black Belt in SIX Sigma Thinking Hats

**Skills**

Architecture Recommendation	<ul style="list-style-type: none"> <li>▪ Enterprise Architecture review and recommendation in application and technical areas, addressing present and future needs</li> <li>▪ Analysis and recommendation of state of the art technology, which fits the customer's requirement.</li> <li>▪ Adept in architecture of Front tier in Java Struts, Middle Tier in J2EE framework.</li> </ul>
Analysis, Design and development	<ul style="list-style-type: none"> <li>▪ Analysis, Design using Object Oriented Methodology</li> <li>▪ UML and Web based Applications</li> <li>▪ Conversion, Migration of various systems</li> <li>▪ Building up of various tools for client</li> <li>▪ Implementation</li> </ul>
Database	<ul style="list-style-type: none"> <li>▪ SQL Server 6.5/7.0/2000</li> <li>▪ Oracle 8i/9i</li> <li>▪ Sybase, My SQL, PostgreSQL</li> </ul>
Tools/Technologies	<ul style="list-style-type: none"> <li>▪ Java Struts</li> <li>▪ JMS, MDB</li> <li>▪ Microsoft Visual Studio.Net</li> <li>▪ XML, XSLT</li> <li>▪ Rational Rose, Magic Draw</li> <li>▪ JBuilder, Eclipse, Oracle Jdeveloper</li> <li>▪ Maven, Ant</li> </ul>
Web/Application Servers	<ul style="list-style-type: none"> <li>▪ Web Logic</li> <li>▪ Java Web Server 2.0</li> <li>▪ IBM Web sphere.</li> <li>▪ JBOSS, Oracle 9iAS</li> </ul>
Languages	<ul style="list-style-type: none"> <li>▪ PL/SQL</li> <li>▪ C#.NET</li> <li>▪ J2EE</li> </ul>

Certification	<ul style="list-style-type: none"><li>▪ SCJP,SCWD and SCEA Level III</li><li>▪ MCAD in .NET</li><li>▪ Black Belt in SIX Sigma Thinking Hats.</li></ul>
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**SHIBAJI SANYAL (SOFTWARE DEVELOPER, EXIMSOFT/AXSYS)**

**CAREER SUMMARY**

More than 9 years IT experience in Construction, Manufacturing, Share management unit, systems design and implementation; database design and maintenance, software design and development, software installation. An MCA & a Sun Certified Java Programmer [SCJP].

## **Annexure 1: Eximsoft International Management Team**



Eximsoft International  
1855 Evans Road  
Cary, NC 27513  
Tel: 919.674.2020  
Fax: 919.674.2036  
www.eximsoft.com

### **Chairman and Chief Executive Officer (CEO): Diju Raha**

Mr. Raha is a publicly acclaimed leader in global work, creating Nortel Networks' major knowledge work Research & Development facility in 1989, and expanding this capability over the past decade. At Nortel, Mr. Raha served as Vice President for International Research and Development, breaking new ground in India, as well as in Russia and Brazil. Since his retirement from Nortel in 1999, Mr. Raha has been active in Information Technology initiatives. He has founded two companies, IPmeeting, a web-based product company in Canada, which he sold in 2000, and Eximsoft International, a specialist in software Product and services in the area of Mobile E commerce.

### **Vice-President of Technology: Amalendu Chatterjee, PhD**

A Nortel and Fujitsu alumnus, Dr. Chatterjee did pioneering work in the area of packet networks, ISDN, digital switching, ATM and wireless technology. He brings over 25 years of particular expertise and specific knowledge in the information technology and telecommunications field. He was Director, Global R&D for Fujitsu and published technical papers on topics of current technical subjects. He led a group in the creation of the first broadband superhighway in North Carolina using ATM technology for distance learning and telemedicine applications. Since leaving Fujitsu, Dr. Chatterjee has acted as a technical advisor to Network Optic Communications and Quad Research. He earned his Ph.D in Computer Communications Networks at the Ottawa, Canada.

### **Vice-President of Business Strategy: Dr. Sorin Cohn**

Dr. Cohn brings over 27 years of extensive high tech experiences. While at Nortel, Dr. Cohn led the first development of DSP applications in digital switching systems, created the Behavioral technology Labs, and introduced a number of innovative product lines, including office wireless systems, advanced wireless services and broadband wireless access networks. Dr. Cohn created an industry consortium for satellite access products.

### **Senior Product/Program Manager: Subhash (Ben) Banerjee**

Ben has over 30 years experience in the Data Communications and telecommunications arenas with ICL (International Computers Ltd.), UR and BNR/Nortel Networks. His area of specialization is New Product Introduction where he has been successful in introducing complex programs ahead of schedule and within budget. He is a graduate of the London, England and the Calcutta.

## **Annexure 2: Eximsoft International Advisory Board**

<b>Name</b>	<b>Current Affiliation</b>	<b>Previous Affiliation</b>
Nils Rydbeck	Prof., Lund Institute Of Technology	CTO, Ericsson
Andre Boivert	Chairman, Slick Edit, Inc	COO, SAS Institute
Hon. Roy MacLaren	Chairman, CIBC	Minister, International Trade, Canada